A STUDY ON SUSTAINABLE LIVELIHOOD SECURITY OF RURAL RAIN-FED FARMERS IN ARSIKERE TALUK, HASSAN DISTRICT OF KARNATAKA

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ABSTRACT

India is focusing on the strategy for improving the sustainable livelihood security of the economically and socially backward rural farmers. This research paper is an attempt to find out the extent of sustainable livelihood security the rural rain-fed farmers through their different means of livelihoods. The present study is being conducted samples respondents of Arsikere taluk from Hassan district of Karnataka. A total of five blocks (hoblis) and twenty villages from each block are being selected randomly. Ten respondents from each village, and in total of 200 respondent's information are enable the researcher to measure the sustainable livelihood security of the rain-fed rural farmers, an index developed Hari Ram Barela and others used with modifications. The four index of sustainable livelihood security, of which, basic livelihood index, financial livelihood, farming supportive livelihood index and health security livelihood index, are used in the study to evaluate the extent of the sustainability.

KEYWORDS: *Sustainability, Farming Supportive Livelihood Index, Health Security, Food Security.*

INTRODUCTION

In developing countries like India where a majority of families derive their livelihoods from agriculture, sustainable agriculture cannot be discussed in separation of sustainable rural livelihoods. However, in predominantly rural economies like India, growth of agriculture is critical to the achievements of goals of poverty reduction and household food-security. Sustainable rural livelihood is a versatile concept and refers to enhancement of access of rural families to food and income-generating activities on a long-term basis. Food and Agriculture Organization (FAO) (Encyclopedia, n.d) has defined sustainable agriculture as the management and conservation of resource base and the orientation of technological and institutional changes in such a manner that ensures attainment and continued satisfaction of human needs of present and future generations. World Food Summit 1996 (Shaw, 2007) declared that food security represents "a state when all people at all times have physical and economic access to safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life."

The sustainable livelihood idea was first introduced by the Brundtland Commission on Environment and Development as a way of linking socio-economic and ecological considerations in a cohesive, policy-relevant structure (Brundtland, 1985). In the year 1992, Robert Chambers and Gordon Conway in their paper, Sustainable Rural Livelihoods: Practical concepts for the 21st Century, they proposed the following composite definition of a sustainable rural livelihood " A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term" (Chambers & Conway, 1992).

The Sustainable Livelihood approach has three insights into poverty which strengthen this new approach. The first is the realization that whereas economic growth may be necessary for poverty reduction, there is not an automatic relationship between the two since it all depends on the

capabilities of the poor to take advantage of expanding economic opportunity. Secondly, there is the realization that poverty is not just a question of low income, but also includes other extents such as bad health, illiteracy, lack of social services, etc., as well as a state of helplessness and feelings of hopelessness in general. Finally, it is now documented that the poor themselves must be involved in the plan of policies and project intentional to better their group.

Ninan and Chandrasekhar (1993) observed that while irrigated crops and those with access to modern farm technology have dominated the growth process, dry crops and drought-prone regions like Karnataka in south India too have shared the gains of agricultural growth (Ninan & Chandrashekar., 1993).

The existing system of panchayat raj system (Rao & Deshpande., 2002) has become so unwieldy and unsustainable and that the time has come to review it, especially in the context of panchayat raj institutions (PRI) and the role they are expected to play in regard to the rural poor. With the help of illustrative data from two drought-prone districts of Karnataka, and demonstrate the feasibility of a decentralised system operated by PRI based on the local staples consumed by the poor. The result seems encouraging enough to suggest that it would be worthwhile to have more substantive investigation as also pilot projects to test the workability of the decentralised system. Agarwal examines how poor rural families in India cope with the food insecurity associated with seasonal troughs in the agricultural production cycle, and with calamities such as drought and famine; the effectiveness of the coping mechanisms they adopt; the intra-household sharing of the burden of coping; and the appropriate state and non-state interventions that would strengthen the survival mechanisms adopted by the families themselves (Agarwal, 2010).

The study by Katiyar S C. et.al (2012) is conducted in four clusters of villages of Uttar Pradesh during 2008 to 2012 to assess the livelihood security of rural people living in deprived areas. Low productivity of crops and animals, extensive land degradation, poor resource management and socioeconomic situation problems existed in the clusters.

The study of (Turton, 2000) finds that Western India Rain-fed Farming Project I and II covered three neighbouring districts of three States - Gujarat, Madhya Pradesh and Rajasthan. These districts were undulating and semi-arid, with a majority of rain-fed farming. The project was located in areas of widespread poverty, having high density of Scheduled Tribes, and from which round about 50% of adults migrate for search of seasonal employment. Phase-I and II of the study focuses on ensuring food security and emphasis on increasing the micro-enterprise activities respectively.

The health status, education status and livelihoods in low-income rural systems were studied (Joffe, 2007), the world population was living with hunger, food insecurity, and under- nutrition has decreased, but the absolute number remains stubbornly large. An even larger number of people have enough to eat but suffer from severe micronutrient deficiencies. The predicament of poor households can be represented in terms of a self-reinforcing cycle involving nutrition, health, and productivity. The degree of poverty limits the quantity and quality of food intake. Macro and micronutrient deficiencies interfere with child growth and development and impair immune function, resulting in a predisposition to infectious diseases. Health status strongly influences the quantity and quality of labour and achieved educational status.

Both Surva Shikshana Abhiyana (SSA) and Right to Education (RTE) are great landmarks in the policy timeline of basic education in India. Ever since these initiatives were rolled out, major developments have occurred. Though there is still a long way to go in meeting the aspirations of the nation through education and skill development essentially through elementary education (Srivastava & Noronha, 2016).

The Human Development Index (HDI) is a statistic combination index of life expectancy, education and per capita income indicators, which are used to construct human development rank. Nations that rank higher on this index have a higher level of education, a higher life expectancy or life span, and a higher GNP per capita than nations with a lower score. United Nations Development Programme (UNDP) was recently released rankings (UNDP, 2019) India was ranked 129th, with index value of 0.647, considering that 189 countries are taken into account. Indian states by their respective HDI, as of 2018, Kerala state stands first in HDI among the states of India. Karnataka stands 19th place in HDI and its come under medium human development index 0.682, considering that total 36Indian states and union territories are taken into account (Wikipedia, 2018).

PROFILE OF THE STUDY AREA

Karnataka, India's seventh largest State in terms of geographical area with 191791 sq. km. According to 2011 census total population was 6.11 crore, accounting for 5.05 percent of India's population. As per 2011 census state has 133.57 lakh households. The State's population has grown by 15.7 percent during the last decade. In 2011, its density of population was 319 and the sex ratio was973. The literacy rate of the State is 75.4 percent in 2011 which is above the National Average of 73.0 percent. Karnataka is India's seventh most urbanised state with 38.7 percent of population living in urban areas and 61.3 percent population living in rural areas.

Karnataka State is on the mission to promote faster and inclusive growth. This is evident from the achievements in various key economic and social sectors, through inclusive programmes and policies.

Arsikere taluk is situated in the southern part of the Hassan district, Karnataka State. The geographic area of the taluk of Arsikere was1265 Sq. Km. It is, situated between 13.310455 North latitude and 76.253708 East longitudes and lies in the south western part of Karnataka. The Taluk which has 5 hoblies and 394 villages and population is 315339 and the average rainfall is about 1031 mms annually. The District Human Development Report (DHDR) aims at estimating inter-taluk disparity in different extent of human development and identifying the developmental gaps to be addressed at the district level and also across different taluks in the district. Preparation of District Human Development Report provides a sound support for designing and implementing district plans from the human development point of view and also for proper allocation of funds. Taluks with 100 percent of Grama Panchayats' performing above the State average 0.4392 of GPHDI. (ANSSIRD & PR, 2018). The third State HDR is brought out in 2019. HDI is estimated using the Global Goal posts by UNDP (2014) based on 2012 data. Bengaluru Urban stands first with HDI value 0.729, Hassan stands with eleventh position with HDI value of 0.639 and Yadgir, district in the last position with HDI value 0.495. District Composite Development Index and Composite Taluk Development and computed. The details of the Human Development Index for each of the Grama panchayats' in the taluk of Hassan district are given in the Table 1.

Table 1 shown that Alur and Sakleshpur taluks with 100 per cent of Gramapanchayats' performing above the State average GPHDI (0.4392), Holenarsipur taluk has less index value in the district, even though all the taluks are above the state average GPHDI.

Table 1: Profile of the Taluk as per HDI

Name of the taluk	No. of Gram panchayats		% of Gram panchayats	
	Above the state average HDI	Below the state average HDI	Above the state average HDI	Below the state average HDI
Alur	15	0	100.00	0.00
Arakalgud	27	9	75.00	25.00
Arsikere	28	17	62.22	37.78
Belur	26	11	70.27	29.73
Channarayapatna	27	13	67.50	32.50
Hassan	38	1	97.44	2.56
Holenarsipura	12	14	46..15	53.85
Sakleshpur	26	0	100.00	0.00
Hassan District	**199**	**65**	**75.38**	**38.31**

Source: (ANSSIRD & PR, 2018)

Table 2: Livelihood Indicators of Arsikere Taluk

Livelihood	Indicators	Statistics	
Basic facilities	PDS	82365	
	Toilets	99.1%	
	Drinking water	Tube wells	3854
		Piped water supply schemes	178
		Mini water supply schemes	423
	LPG	60381	
	Literacy rate (2011 census)	78.96	
Financial facilities	Bank loans to Agricultural Sector (in lakhs)		
	RRBs	62407	49 branches
	PSBs	726	32
	DCC banks loans	7695.96	5
	KSCARD/PLD	19.92	1
	SHGs	1463 (no, of groups)	22858 members 1.35 crore (Loan)
	Pensions(beneficiary No's)	(Old age + Widow + Disable +Sandya Suraksha)	27289
	Irrigation (NIA-in ha)	4145	

	Cattles (in no's)	57619	
	Veterinary Hospitals (No's)	36	
	Subsidized Seeds (in qntls)	2834	
Health and Family welfare	24/7 working hospitals	3	5 Hospitals
	Deliveries	221	
	JSY	718	
	Ambulance	7216 (beneficiaries)	6
	Hospitals (G+P)	37	
	Immunisation given to children	16131	

Source: Hassan District at a Glance, 2018-19, District Statistical Office, Hassan

METHODOLOGY AND MEASUREMENT

Livelihood and health are the prime theme of the core of human development. Providing broader avenue for livelihood and better prospective of health, enhance the empowerment of the people. In this direction, the present research work made an attempt to capture the people perception and opinion on livelihood facilities and health facilities offered in the study area. However, livelihood is a multifaceted and multi-dimensional, the present takes into account of three livelihood measures namely Basic Livelihood Index, Financial Livelihood Index and Farm Supporting Livelihood Index along with Health Index. To capture the level of livelihood in the stated dimensions, Livelihood Index is constructed. These indices are constructed on the basis of scale of the measured indicators under each of the dimensions. The Livelihood and Health Index is a summary of key dimensions. It measures the people perception on availability of facilities of basic livelihood, financial livelihood, farming supporting livelihood, and health facilities. The following description explains the methodology of calculation of the various empowerment indices and Table 1 indicates the brief note on each of the indicators under livelihood index and scale of measurement.

KEY ASPECTS OF LIVELIHOOD INDEX

Basic Livelihood Index: The dimension of Basic Livelihood is constructed by using three items related to necessities, government facilities and farm education.

Financial Livelihood Index: The dimension of Financial Livelihood is constructed by using three items related to financial facilities, procedure of bank loans and food prices at market.

Farming Supporting Livelihood Index: The dimension of Farming Supporting Livelihood is constructed by using three items related to basic needs of human being in terms of HYVs', prices for farm produce and fluctuations of farm prices.

Steps to calculate the Health Index: The dimension of Health Index is captured by using five items related to health facilities in terms of availability of services at primary health centre, services of vaccination for children, availability of 24 hours' facility, availability of services of ambulance facility, and availability of health insurance.

The items of these four indexes are three point scaled questions from the scale of 1, indicates the lack of facility, to scale of 3, index the availability of services. On the basis of the responses provided by the respondents to the stated thee items the total score is obtained. The total score of the respective index is the sum of responses by the respondents to the stated items. This total score is termed as actual score. By using this actual score, the Index is constructed for each of the respondents. Minimum and maximum values are fixed in order to standardize the scores of the items, and for converting the indices value between 0 and 1. The maximum value is the 9 and minimum score is 3. The very high scale of 3 for three items gives 9 as maximum value and the very low scale of 1 for three items gives 3 as minimum value. Having defined the maximum and minimum score, the Index is calculated as follows:

$$\text{Livelihood Index} = \frac{\text{Actual Score} - \text{Minimum Score}}{\text{Maximum Score} - \text{Minimum Score}}$$

The methodology for deriving the stated above formula holds for Basic Livelihood Index, Financial Livelihood Index, Farming Supporting Livelihood Index and Health Index value for each of the respondents. The arithmetic mean of all four livelihood index value of each of the respondents of the study helps in deriving the livelihood indexes of the study. These indexes value also lies between 0 and 1. The value closer to 0 indicates the low level of livelihood and value closer to 1 indicates the high level of livelihood facilities.

Table 3: Indicators of Livelihood Index and Health Index

Sl. No	Index – Key Dimensions	Indicators	Level of Measurement	Observations and Scaling		
				1	2	3
1	Basic Livelihood Index	Basic Necessities	Ordinal	Not at all provided	Inadequately provided	Adequately provided
		Securing Government Benefits	Ordinal	Very difficult	Difficult	Easy
		Farm Extension Education	Ordinal	Not at all provided	Inadequately provided	Adequately provided
2	Financial Livelihood Index	Financial Facilities	Ordinal	Not at all provided	Inadequately provided	Adequately provided
		Bank Loan Procedures	Ordinal	Very difficult	Difficult	Simple
		Food Prices at Market	Ordinal	Very high	High	Reasonable
3	Farming Supporting Livelihood Index	High Yield Varieties	Ordinal	Not at all available	Inadequate	Adequately Available
		Prices for Farm Produce	Ordinal	Not remunerative	Fair	Very good
		Fluctuations of Farm Prices	Ordinal	Extremely unstable	Unstable	Very stable
4	Health Index	Service at Primary Health Centre	Ordinal	Not good	Fair	Good
		Service of Vaccination for Children	Ordinal	Not good	Fair	Good
		24 Hours of Service Facility	Ordinal	Not good	Fair	Good
		Service of Ambulance Facility	Ordinal	Not good	Fair	Good
		Health Insurance Service	Ordinal	Not good	Fair	Good

Table 3 of indicators of livelihood index and health index represents the key dimensions of the four index, their respective indicators and the level of measurement of the indicators. The provided scale and its indicators with observed description is also represented in the Table3. As indicated in the table, basic livelihood index, financial livelihood index and farming supporting livelihood index are consisting of three indicators and health index consisting of five indicators. In total all these indicators are measured in ordinal scale of 1 to 3 values.

COMPARISON OF LIVELIHOOD INDEX OF ARASIKERE TALUK

The performance of all the hobli of Arasikere in terms of livelihood and health facilities are assessed and compared by comparing the descriptive statistics of livelihood index and health index. Table 3 projects the various descriptive measures of livelihood index and health index.

Table 4: Descriptive Statistics on Index Values of Various Hobli of Arasikere Taluk

Index	Hobli	N	Mean	Std. Deviation	Std. Error	Min.	Max.
Basic Livelihood Index	Banavara	40	.595852	.0834568	.0131957	.5000	.6667
	Kanikatte	40	.587512	.1251217	.0197835	.3333	.8333
	Javagal	40	.583357	.1687920	.0266884	.1667	1.0000
	Kasaba	40	.587515	.1360368	.0215093	.3333	1.0000
	Gandsi	40	.520840	.1695877	.0268142	.1667	.8333
	Total	**200**	**.575015**	**.1415414**	**.0100085**	**.1667**	**1.0000**
Financial Livelihood Index	Banavara	40	.645840	.1470813	.0232556	.5000	1.0000
	Kanikatte	40	.650010	.1181447	.0186803	.5000	.8333
	Javagal	40	.691680	.1944644	.0307475	.1667	1.0000
	Kasaba	40	.629170	.1485307	.0234848	.3333	.8333
	Gandsi	40	.579170	.1886657	.0298307	.1667	1.0000
	Total	**200**	**.639174**	**.1643665**	**.0116225**	**.1667**	**1.0000**
Farming Supporting Livelihood Index	Banavara	40	.458335	.1719326	.0271849	.00000	.66670
	Kanikatte	40	.537503	.1032821	.0163303	.33330	.83330
	Javagal	40	.491663	.1409772	.0222905	.16670	.83330
	Kasaba	40	.500000	.0533867	.0084412	.33330	.66670
	Gandsi	40	.554170	.1093091	.0172833	.33330	.83330
	Total	**200**	**.508334**	**.1258760**	**.0089008**	**.00000**	**.83330**
Health Index	Banavara	40	.997500	.0158114	.0025000	.9000	1.0000
	Kanikatte	40	.995000	.0220721	.0034899	.9000	1.0000
	Javagal	40	.997500	.0158114	.0025000	.9000	1.0000
	Kasaba	40	.995000	.0220721	.0034899	.9000	1.0000
	Gandsi	40	.997500	.0158114	.0025000	.9000	1.0000
	Total	**200**	**.996500**	**0.184241**	**.0013028**	**.9000**	**1.0000**

The basic livelihood index value of Banavara is relatively higher (.595852) with the least standard deviation (.0834568).The performance of Banavara in creating basic livelihood is highest in Arasikere taluk. The financial livelihood index value of Javagal is relatively higher than other hobli (.691680), however the standard deviation is low for Kanikatte (.1181447). The performance of Javagal in creating financial livelihood is highest in Arasikere taluk. The farming supporting livelihood index of Gandsi is relatively higher than other hobli (.554170), whereas the standard deviation is low for Kasaba (.0533867). The performance of Gandsi in creating farming supporting livelihood is highest in Arasikere taluk. However, the value of health index of all the hobli do not differ much between them, where Banavara, Kanikatte, Javagal and Gandsi stands in the same position with the same value (.997500). The standard deviation of Banavara, Javagal, Gandsi is also same (.0158114). The performance of Banavara, Kanikatte, Javagal and Gandsi remain same in creating health facilities. The four index values of all these five hoblis' are presented in multiple bar diagram in Figure 1. The statistical difference between the mean values of four indexes is tested by using ANOVA and presented the result in Table 5.
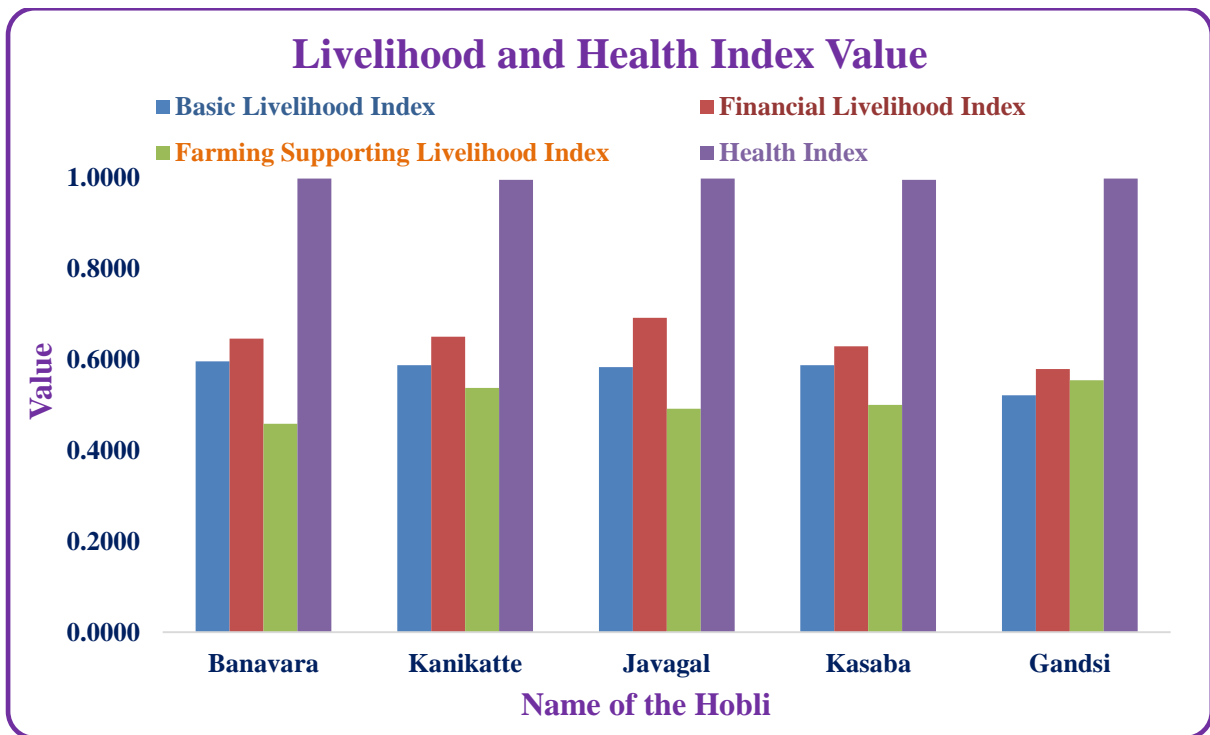
Figure 1: Livelihood Index and Health Index of Five Hobli of Arasikere Taluk

Table 5: ANOVA of Index Values of Various Hobli of Arasikere Taluk

Index	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Basic Livelihood Index	Between Groups	.150	4	.037	1.902	.112
	Within Groups	3.837	195	.020		
	Total	**3.987**	**199**			
Financial Livelihood Index	Between Groups	.251	4	.063	2.388	.052
	Within Groups	5.125	195	.026		
	Total	**5.376**	**199**			
Farming Supporting Livelihood Index	Between Groups	.238	4	.059	3.972	.004
	Within Groups	2.916	195	.015		
	Total	**3.153**	**199**			
Health Index	Between Groups	.000	4	.000	.217	.928
	Within Groups	.067	195	.000		
	Total	**.068**	**199**			

The hypothesis of there is no significant difference between the average value of livelihood index and health index across the hobli's testing by using One-way ANOVA. The mean sum of square between the group (.037) of basic livelihood index across the hoblis' is relatively higher than the mean sum of square of within the group (0.020). However, the F ratio with 4 and 195 is 1.902, and its p value of .112 is statistically insignificant at 5%. Hence, the hypothesis of there no significant difference in the mean value of performance of five hobli's of Arasikere taluk in basic livelihood is cannot be rejected. Therefore, it can be concluding that the performance of all five hobli's in basic livelihood index is remaining same.

The mean sum of square between the groups (.063) of basic financial livelihood index across the hoblis' is relatively higher than the mean sum of

square of within the group (0.026). However, the F ratio with 4 and 195 is 2.388, and its p value of .052 is statistically insignificant at 5%. Hence, the hypothesis of there no significant difference in the mean value of performance of five hobli's of Arasikere taluk in financial livelihood is cannot be rejected. Therefore, it can be concluding that the performance of all five hobli's in financial livelihood index is remaining same.

The mean sum of square between the group (.059) of farming supporting livelihood index across the hoblis' is relatively higher than the mean sum of square of within the group (0.015). However, the F ratio with 4 and 195 is 3.972, and its p value of .004 is statistically significant at 5%. Hence, the hypothesis of there no significant difference in the mean value of performance of five hobli's of Arasikere taluk in basic livelihood is can be rejected.

Therefore, it can be concluding that the performance of all five hobli's in basic livelihood index doing not remain same.

The mean sum of square between the group (.000) of basic livelihood index across the hoblis' is relatively higher than the mean sum of square of within the group (0.000). However, the F ratio with 4 and 195 is .217, and its p value of .928 is statistically insignificant at 5%. Hence, the hypothesis of there no significant difference in the mean value of performance of five hobli's of Arasikere taluk in health index is cannot be rejected. Therefore, it can be concluding that the performance of all five hobli's in health index remain same.

Comparison of Livelihood Index of Arasikere Taluk

Table 6: Descriptive Statistics on Index Values of Various Villages of Arasikere Taluk

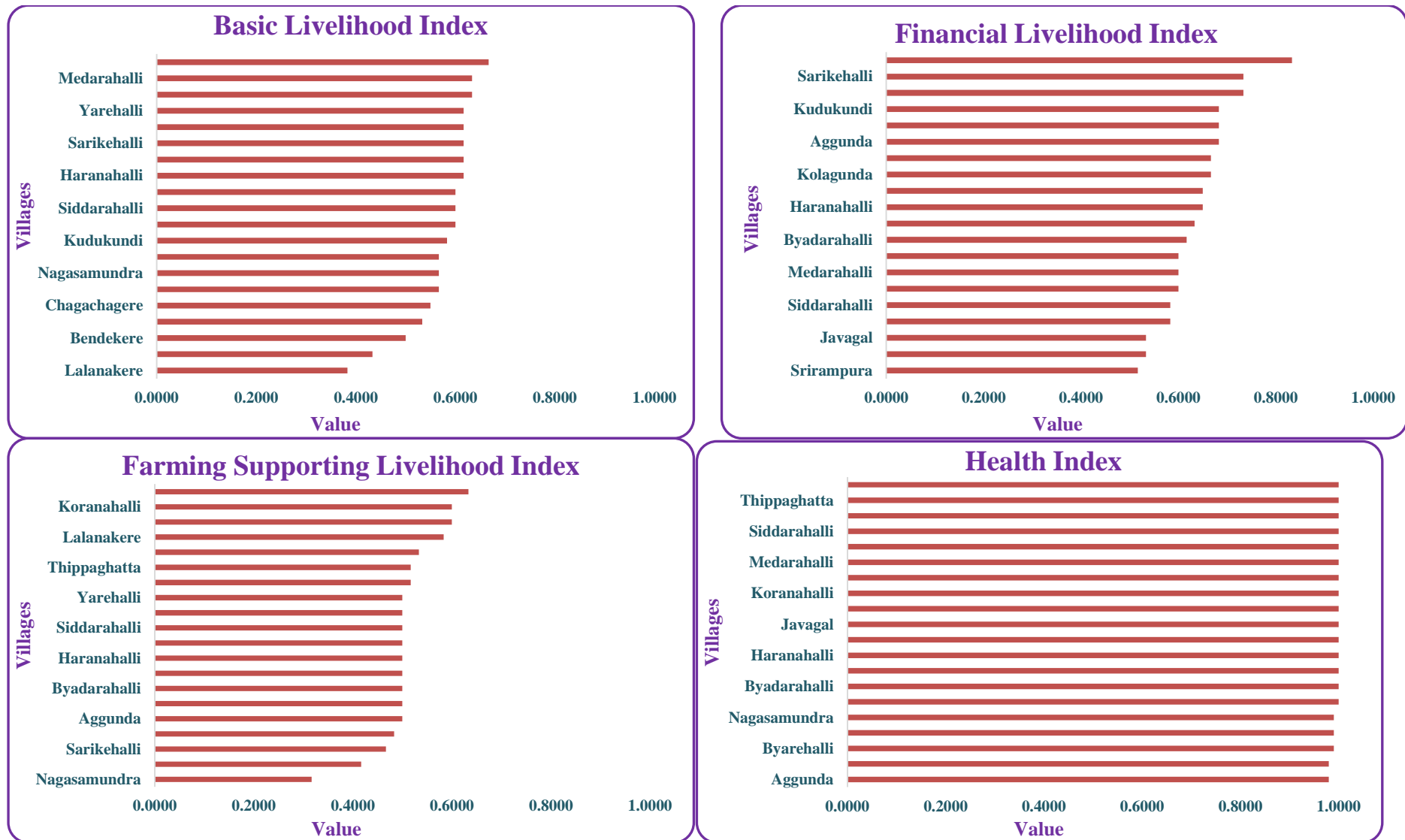| Villages	N	Basic Livelihood Index					Financial Livelihood Index					Farming Supporting Livelihood Index					Health Index				
		Mean	Std. Dev.	Std. Error	Min.	Max.	Mean	Std. Dev.	Std. Error	Min.	Max.	Mean	Std. Dev.	Std. Error	Min.	Max.	Mean	Std. Dev.	Std. Error	Min.	Max.
Aggunda	10	0.6334	0.0703	0.0222	0.5000	0.6667	0.6833	0.1459	0.0461	0.5000	0.8333	0.5000	0.0000	0.0000	0.5000	0.5000	0.9800	0.0422	0.0133	0.9000	1.0000
Bendekere	10	0.5000	0.2079	0.0657	0.3333	1.0000	0.6000	0.1956	0.0619	0.3333	0.8333	0.5000	0.1111	0.0351	0.3333	0.6667	1.0000	0.0000	0.0000	1.0000	1.0000
Byadarahalli	10	0.6000	0.0861	0.0272	0.5000	0.6667	0.6167	0.0805	0.0255	0.5000	0.6667	0.5000	0.0000	0.0000	0.5000	0.5000	1.0000	0.0000	0.0000	1.0000	1.0000
Byarehalli	10	0.6667	0.1361	0.0430	0.5000	1.0000	0.8333	0.1361	0.0430	0.6667	1.0000	0.6000	0.1165	0.0369	0.5000	0.8333	0.9900	0.0316	0.0100	0.9000	1.0000
Chagachagere	10	0.5500	0.0805	0.0255	0.5000	0.6667	0.5833	0.1800	0.0569	0.3333	0.8333	0.5000	0.0000	0.0000	0.5000	0.5000	1.0000	0.0000	0.0000	1.0000	1.0000
Haranahalli	10	0.6167	0.0805	0.0255	0.5000	0.6667	0.6500	0.1230	0.0389	0.5000	0.8333	0.5000	0.0000	0.0000	0.5000	0.5000	1.0000	0.0000	0.0000	1.0000	1.0000
Honnagatta	10	0.5667	0.0861	0.0272	0.5000	0.6667	0.6500	0.0946	0.0299	0.5000	0.8333	0.5333	0.0703	0.0222	0.5000	0.6667	1.0000	0.0000	0.0000	1.0000	1.0000
Javagal	10	0.4334	0.2383	0.0754	0.1667	0.6667	0.5334	0.2049	0.0648	0.1667	0.6667	0.4167	0.1179	0.0373	0.1667	0.5000	1.0000	0.0000	0.0000	1.0000	1.0000
Kolagunda	10	0.6167	0.0805	0.0255	0.5000	0.6667	0.6667	0.1571	0.0497	0.5000	1.0000	0.4833	0.0946	0.0299	0.3333	0.6667	1.0000	0.0000	0.0000	1.0000	1.0000
Koranahalli	10	0.5333	0.1721	0.0544	0.3333	0.8333	0.6833	0.1230	0.0389	0.5000	0.8333	0.6000	0.1406	0.0444	0.3333	0.8333	1.0000	0.0000	0.0000	1.0000	1.0000
Kudukundi	10	0.5833	0.1416	0.0448	0.3333	0.8333	0.6833	0.1995	0.0631	0.3333	1.0000	0.6333	0.1315	0.0416	0.5000	0.8333	1.0000	0.0000	0.0000	1.0000	1.0000
Lalanakere	10	0.3833	0.1933	0.0611	0.1667	0.6667	0.5333	0.1532	0.0484	0.3333	0.8333	0.5833	0.1179	0.0373	0.5000	0.8333	0.9900	0.0316	0.0100	0.9000	1.0000
Medarahalli	10	0.6334	0.0703	0.0222	0.5000	0.6667	0.6000	0.0861	0.0272	0.5000	0.6667	0.5000	0.0000	0.0000	0.5000	0.5000	1.0000	0.0000	0.0000	1.0000	1.0000
Nagasamundra	10	0.5667	0.0861	0.0272	0.5000	0.6667	0.6333	0.1315	0.0416	0.5000	0.8333	0.3167	0.2881	0.0911	0.0000	0.6667	0.9900	0.0316	0.0100	0.9000	1.0000
Sarikehalli	10	0.6167	0.0805	0.0255	0.5000	0.6667	0.7334	0.1610	0.0509	0.5000	1.0000	0.4667	0.1721	0.0544	0.3333	0.8333	1.0000	0.0000	0.0000	1.0000	1.0000
Sathanagare	10	0.6167	0.1372	0.0434	0.3333	0.8333	0.6667	0.1571	0.0497	0.5000	0.8333	0.5167	0.1230	0.0389	0.3333	0.8333	0.9800	0.0422	0.0133	0.9000	1.0000
Siddarahalli	10	0.6000	0.1166	0.0369	0.3333	0.6667	0.5834	0.1179	0.0373	0.3333	0.6667	0.5000	0.0000	0.0000	0.5000	0.5000	1.0000	0.0000	0.0000	1.0000	1.0000
Srirampura	10	0.5667	0.1792	0.0567	0.3333	0.8333	0.5167	0.1995	0.0631	0.1667	0.6667	0.5000	0.0786	0.0249	0.3333	0.6667	1.0000	0.0000	0.0000	1.0000	1.0000
Thippaghatta	10	0.6000	0.0861	0.0272	0.5000	0.6667	0.6000	0.1405	0.0444	0.5000	0.8333	0.5167	0.0527	0.0167	0.5000	0.6667	1.0000	0.0000	0.0000	1.0000	1.0000
Yarehalli	10	0.6167	0.0805	0.0255	0.5000	0.6667	0.7333	0.1956	0.0619	0.5000	1.0000	0.5000	0.1111	0.0351	0.3333	0.6667	1.0000	0.0000	0.0000	1.0000	1.0000
Total	**200**	**0.5750**	**0.1415**	**0.0100**	**0.1667**	**1.0000**	**0.6392**	**0.1644**	**0.0116**	**0.1667**	**1.0000**	**0.5083**	**0.1259**	**0.0089**	**0.0000**	**0.8333**	**0.9965**	**0.0184**	**0.0013**	**0.9000**	**1.0000**

Figure 2: Livelihood Index and Health Index of Twenty Villages of Arasikere Taluk

As per the output of descriptive statistics of Table 6, the basic livelihood index value of Byarehalli is relatively higher (.0.6667). The performance of Byarehalli in creating basic livelihood is highest in Arasikere taluk. The financial livelihood index value of Byarehalli is relatively higher than other villages (.0.8333). The performance of Byarehalli in creating financial livelihood is highest in Arasikere taluk. The farming supporting livelihood index of Gandsi is relatively higher than other hobli (0.6333), whereas the standard deviation is low for Kasaba (.0533867). The performance of Kudukundi in creating farming supporting livelihood is highest in Arasikere taluk. However, the value of health index of majority of the villages do not differ much between them, the four index values of all these twenty villages are presented in multiple bar diagram in Figure 2 and the results of is presented in Table 6.

Table6: ANOVA of Index Values of Various Villages of Arasikere Taluk

Index	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Basic Livelihood Index	Between Groups	.908	19	.048	2.796	.000
	Within Groups	3.078	180	.017		
	Total	**3.987**	**199**			
Financial Livelihood Index	Between Groups	1.118	19	.059	2.488	.001
	Within Groups	4.258	180	.024		
	Total	**5.376**	**199**			
Farming Supporting Livelihood Index	Between Groups	.870	19	.046	3.607	.000
	Within Groups	2.284	180	.013		
	Total	**3.153**	**199**			
Health Index	Between Groups	.009	19	.000	1.373	.145
	Within Groups	.059	180	.000		
	Total	**.068**	**199**			

The hypothesis of there is no significant difference between the average value of livelihood index and health index across the villages is testing by using One-way ANOVA. The mean sum of square between the group (.048) of basic livelihood index across the villages is relatively higher than the mean sum of square of within the group (0.017). However, the F ratio with 19 and 180 is 2.796, and its p value of .000 is statistically significant at 5%. Hence, the hypothesis of there no significant difference in the mean value of performance of twenty villages of Arasikere taluk in basic livelihood is can be rejected and concluding that the performance of all twenty villages in basic livelihood index is do not remain same.

The mean sum of square between the group (.059) of basic financial livelihood index across the villages is relatively higher than the mean sum of square of within the group (0.024). However, the F ratio with 4 and 180 is 2.488, and its p value of .001 is statistically significant at 5%. Hence, the hypothesis of there no significant difference in the mean value of performance of twenty villages of Arasikere taluk in financial livelihood is can be rejected. Therefore, it can be concluding that the performance of all twenty villages in financial livelihood index is do not remain same.

The mean sum of square between the group (.046) of farming supporting livelihood index across the villages is relatively higher than the mean sum of square of within the group (.013). However, the F ratio with 4 and 180 is 3.607, and its p value of .000

is statistically significant at 5%. Hence, the hypothesis of there no significant difference in the mean value of performance of twenty villages of Arasikere taluk in basic livelihood is can be rejected. Therefore, it can be concluding that the performance of all twenty villages in basic livelihood index do not remain same.

The mean sum of square between the group (.000) of basic livelihood index across the villages is relatively higher than the mean sum of square of within the group (0.000). However, the F ratio with 4 and 180 is 1.373, and its p value of .145 is statistically insignificant at 5%. Hence, the hypothesis of there no significant difference in the mean value of performance of twenty villages of Arasikere taluk in health index is cannot be rejected. Therefore, it can be concluding that the performance of all twenty villages in health index remain same.

CONCLUSION

The three livelihood index of the present study helps in concluding the provision, accessibility and availability of livelihood activities in the study area. The three indexes are thematically different; however, they are the core for sustaining the decent life. The higher health index value of the study has helps to draw remarks that health facilities are prominently occupying the higher position in the study than the farming supporting, financial and basic livelihood index. The lower value of farming supporting and basic livelihood index value reveals to draw conclusion that there is enough provision for

absorbing facilities of farm supporting and basic livelihood index in the study area, thus, the initiatives and policy actions of the government in this direction inevitable and more appreciated.

There were variations in status of sustainable livelihood securities at various level, government has to assess impact of programmes on specific issues of livelihood securities at the gross root level, as well as identify the strengths and weaknesses of the existing policies and has to integrate sustainable development objectives such as larger inflow of funds to low livelihood securities regions in policy formulation. The government has to take comprehensive holistic view of the sustainable livelihood development, outside the regular governmental functioning.

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